UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

SEP 5 2000

Docket Clerk
DOT Central Docket Management Facility
Plaza-401
400 Seventh Street, SW
Washington, DC 20590-0001

RE: Docket Number FRA-2000-7472

Dear Sir/Madam:

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act, the Environmental Protection Agency (EPA) has reviewed the Federal Railroad Administration's (FRA) draft programmatic environmental impact statement (EIS) on the Maglev Deployment Program (EIS No. 000245). Our general comments/concerns are highlighted below with detailed comments enclosed for your consideration.

Magnetic Levitation (Maglev) is an advanced transportation technology in which magnetic forces lift, propel and guide a vehicle over a specially designed guideway. As authorized by Congress in the Transportation Equity Act for the 21st Century, the program encourages the development and construction of an operating transportation system employing magnetic levitation, capable of safe use by the public at a speed in excess of 240 miles per hour. Seven different state-sponsored projects are discussed in the EIS. Once one or more projects have been selected, a site-specific EIS(s) will be prepared.

Since this is a programmatic document our comments focus on the broader programmatic issues, rather than focusing on the various environmental impacts associated with each individual proposal. It is our belief that the site specific impacts can best be dealt with when the next level EIS is prepared. It is at that stage that detailed analysis, impact avoidance, and mitigation can best be developed. Clearly the public scoping process that will occur when the site specific EIS is prepared may well provide more insight into local environmental issues beyond those that are briefly discussed in this document, the summary of which are found on table ES-1.

Since this programmatic document is the first EIS to discuss a magnetic levitation transportation system/program, we believe that the document needs to clearly and fully disclose

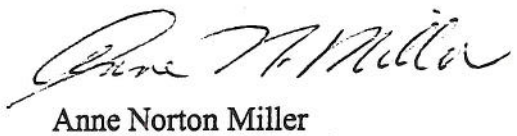
the existing state of knowledge regarding the safety and health effects of the technology. The brief discussions in the draft EIS and reliance on other referenced documents do not provide the reader with current information about the uncertainties in scientific and medical issues surrounding this technology. For example, the Department of Transportation's previous Maglev program (1999-1994) devoted considerable resources to concerns about biological and health effects. Laboratory research/review and analysis were conducted on existing health effects information that would be relevant to Maglev. The final programmatic EIS should include this information.

In addition, the document does not provide much detail on the general operating characteristics of such a transportation system. This programmatic document should provide the reader with the relevant information so that the reader will have a reasonable idea of what it would be like to experience the pass by of a Maglev vehicle. We would expect that such a description would focus on visual, sound, and vibration effects.

Accordingly, EPA rates the draft programmatic EIS an EC-2. That is, we have environmental concerns and have requested additional information/clarification in the final programmatic EIS. Enclosed is a description of our rating system.

We appreciate the opportunity to review this draft programmatic EIS. If you need assistance, please contact me at 202-564-2400 or Ken Mittelholtz, the staff contact, at 202-564-7156.

Sincerely,



Anne Norton Miller
Acting Director
Office of Federal Activities

Enclosures

EPA's Detailed Comments on the Draft Programmatic EIS for the Maglev Deployment Program

Magnetic Exposure Comments:

The EIS states that the public and occupational exposure concerns are adequately addressed by "demonstration of compliance by the Maglev developer and operator with the existing voluntary standards and guidelines for human exposure safety to EMF, EMR and static (DC) fields." This approach does not provide the reader with current information about the uncertainties in the scientific and medical literature upon which the standards and guidelines are based and the draft programmatic EIS can thus be criticized for not including a review and discussion of the current scientific literature. Overall, the manner in which exposure and potential health effects are treated appears to present the view that there is little or no reason to be concerned about exposure and possible health effects.

Addressing safety should include the review of the biological and health effects information provided in the scientific literature, as well as comparing exposure to applicable safety standards. This is important to discussing the question of risk/safety from exposure to EMF and EMR in that the exposure guidelines used are based on the available information from research involving acute exposure and effects, i.e., intense exposures for short time periods; these guidelines are not intended to address chronic, prolonged (repeated, intermittent), low-intensity exposures. The limitations of these guidelines and the implications for uncertainty with regard to effects are described in this document on p. 4-87, line 3. Information about the limitations of existing guidelines and uncertainties with regard to the degree of protection should be provided at the beginning of the discussion, Public Health and Safety, section 3.16.2, p. 3-62, par.1. For example, the recent report to the U.S. Congress from the National Institute of Environmental Health Sciences (NIEHS), *NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields* (NIH Publication No. 99-4493), states that "ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard (pp. 10, 36)." In summary, "the NIEHS believes that there is weak scientific evidence for possible health effects from ELF-EMF exposures, and until stronger evidence changes this opinion, inexpensive and safe reductions in exposure should be encouraged (p. 38)." The FRA endorsement of the "prudent avoidance" policy is consistent with this NIEHS statement.

It should also be pointed out that the statement at the top of p.3-64 that three recent reports, including the NIEHS EMF-RAPID Working Group Report, have considerably weakened the link between EMF residential exposures and childhood leukemia risk is inaccurate in that the NIEHS Working Group concluded that ELF-EMF are possibly carcinogenic to humans. It may

be preferable to delete the statement that "the three reports ...have considerably weakened the link between EMF residential exposures and childhood leukemia risk" and instead cite the NIEHS report to Congress which stated that the NIEHS believes that there is weak scientific evidence for possible health effects from ELF-EMF exposures.

The treatment of exposure and risk/safety should be done through a review of the scientific literature that shows that uncertainty about risk still exists. It is fair to compare Maglev's possible exposures to exposure limits and exposures that are produced by other systems in order to point out the similarities and potential for compliance; however, a comprehensive programmatic EIS should include a discussion of the uncertainties associated with the guidelines. For example, previous EISs for major systems that produce environmental exposure to levels of radiation treated the scientific literature on exposure and effects in greater detail. Recent examples are the programmatic EIS for the Next Generation Weather Radar (NEXRAD) and the draft EIS for the proposed Alaskan Over-the-Horizon Backscatter Radar. We recommend that this programmatic EIS use the same process.

General Comments:

Since the purpose and need of this action relates to FRA's compliance with legislation (Transportation Equity Act for the 21st Century) we recommend all of Title 23, Chapter 3, Section 322, be included in the document, at least as an appendix. This should help provide the reader with a better understanding of the purpose and need as envisioned by Congress. By including the legislation, the reader can also see the minimal project selection criteria that Congress requested the Secretary use when establishing the selection criteria.

We believe that a major function of this programmatic document is to provide the reader with a detailed description of the general operational characteristics of this technology. Since there currently is no Maglev public transportation system operating in the United States, readers will likely have a difficult time assessing how such a system operates and assessing potential impacts on them. For example, it might be useful to describe the general effects a person might experience standing various distances from a Maglev structure with varying vehicle speeds (50 mph, 150 mph and 240+ mph). We would expect that such a description/analysis would focus on visual, sound, and vibration effects. The background information for much of this discussion will likely come from measurements that were taken at the Emsland Test Track in Germany (vendor, Transrapid International).

A good example of why we believe that a detailed description of operational characteristics is necessary can be found on page 4-92, where there is a brief discussion on Maglev dominant noise sources. Category I refers to engine propulsion noise as being dominant within the speed range of 0-50 mph. Since the engine is magnetic propulsion, the reader needs to be provided with background information on the noise characteristics associated with this "engine" at various speeds.

The inclusion of a few artist's drawings depicting the support structure and vehicle in

various setting such as urban, freeway median, etc., would also provide the reader with useful information, since currently there is no such system for a comparison. Currently the only graphics are the two that are on the front cover of the programmatic EIS.

Specific Comments:

Page 3-62, par.1, line 3: The statement, "... demonstration of compliance by the Maglev developer and operator with the existing voluntary standards and guidelines ...", is incorrect in that the Federal Communications Commission (FCC) guidelines that specify radiofrequency (RF) radiation exposure limits are mandatory, not voluntary, for all systems regulated by the FCC.

Page.3-63: Table 3.16-4 has errors: 30-300 MHz should replace 300 MHz in the the Frequency Range column, and the power density and magnetic field intensities for 30-300 MHz are not zero.

2nd par. Clarify DC and AC fields. The Earth's magnetic field is a DC field, while the Maglev fields are AC. AC and DC field exposures do not produce the same effects.

Page 3-64: top of page starting at line 3: The *NIEHS Report on Health* Effects *from Exposure to Power-Line Frequency Electric and Magnetic Fields* should be referenced.

par. 2, line 3: The correct reference should be to Tables 3-16-1,2,3,4. In addition, it should be noted that high intensity RF exposure can cause tissue damage by direct heating, as well as, indirectly by electrical shock and burn.

par. 3: In 1996, the FCC adopted the National Council on Radiation Protection and Measurements' recommended guidelines for human exposure to RF radiation; the FCC's guidelines also incorporate some features of the IEEE guidelines. The most recent voluntary standards issued for both ELF-EMF and RF radiation are those of the International Commission on Nonionizing Radiation Protection (ICNIRP), not the IEEE guidelines. The IEEE guidelines are not only not the most recent, but, in EPA's view, are not as protective as the others.

par. 4: It should be made clear that the exposure limits used by some states to determine the width of the right-of-way under electric transmission lines are not based on health effects, but are the limits for the electric field at the edge of the right-of-way which are intended to prevent electrical shock and burn from contact with electrical conductors. The magnetic field limits are the magnetic field intensities associated with the edge-of right-away electric field limits.

Page 3-65, par.2: Laboratory research, review and analysis of existing health effects information that could impact on Maglev were conducted, and reports were written as part of the

previous Maglev program. Specific reports containing effects information should be identified, as well as the reports that contain exposure information.

par. 4, line 4: Rather than calling any adverse health effects speculative, it is more appropriate to say that adverse health effects are suggestive. This is supported by the NIEHS conclusion in its report to Congress that the NIEHS believes that there is weak scientific evidence for possible health effects from ELF-EMF exposures.

par.5, line 3: Evidence should be provided to support the assumption that TR08 EMF and EMR levels are similar to those of the TR07. This support was not given, so the reader has no basis for confidence in this assumption.

Page 3-70, Table 3.18-1: The frequency range for transmitters should read:

Television broadcast: VHF-TV: 54 to 216 MHz
UHF-TV: 470 to 806 MHz

FM radio: 88 to 108 MHz

Page 4-85, par.1: Human exposure safety should be addressed by review of the relevant scientific literature as well as addressing compliance with applicable exposure guidelines. The current guidelines have serious limitations, as identified in this document on p. 4-87, where it is stated that these guidelines "are not aimed at prevention of long-term, low level chronic exposures linked with potentially adverse health effects." This limitation indicates that uncertainties exist about exposure and effects, and this limitation in exposure guidelines requires that a discussion of possible health risks be done by review and analysis of effects literature, not a comparison of expected exposures with current exposure guidelines.

Page 4-87, par 2: It may be true that the proposed Maglev TR08 may not have an adverse safety impact, but not necessarily because the vehicle complies with existing exposure standards.

The NIEHS report, *Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields (NIH Publication No. 99-4493)*, states that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard. The childhood leukemia studies upon which the NIEHS statement was based involved residential 60 Hz magnetic field exposures that were much less than the limits of the standards cited in this EIS.

par. 3, line 3: 1 mG = 0.1 microTesla, <u>not</u> 1 mG = 10 microTesla

par.3, line 14: If the detailed information (in the original reports referred to) is important, then that information should be provided in this document.

Page 4-91, par 2, line 11: Replace NOIH with NIOSH

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommend for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."